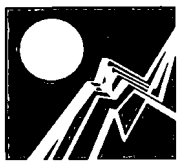

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A Crouse Enterprises
Company

CE Consultants, Inc.

Remedial Action Work Plan

Prepared for:

Lenox. Incorporated

Project No. C0020
October 16, 1996

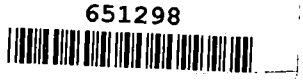


Table of Contents

Crouse Enterprises, Inc.

Remedial Action Work Plan

Remedial Action Work Plan
Lenox, Incorporated
Pomona, New Jersey

1.0 Introduction

The project site (South Site) is located directly south of the Lenox China (Lenox) facility on Tilton Road in Pomona, Galloway Township, New Jersey. The South Site is not part of the Lenox facility, rather it is an approximate one acre tract of land which is contiguous to the Lenox facility as shown in Figure 1.

The South Site was utilized by Lenox to store waste plaster molds and broken ware from approximately 1954 to the late 1970s. The extent of the South Side, materials stored and the dates of operation were determined by a review of historic aerial photographs and through an interview with a former employee. These photographs and the interview indicate that all waste materials were placed on the surface of the South Site with the only exception being a small pit on the north end of the South Site. It is estimated that this pit was a maximum of six feet deep with an area of less than 0.1 acre.

Recently, Lenox personnel were informed by the property owner that the property which includes the South Site will be developed. The owner is currently seeking approvals for construction of a continuing care retirement facility on this property.

Lenox personnel recently walked the property and small amounts of broken china and plaster molds are visible on the surface. Lenox retained CE Consultants, Inc. (CE Consultants) to perform a remedial soil investigation for the purpose of determining the extent to which site soils had been affected by the china. This investigation is described in Section 2 below.

2.0 Remedial Investigation

2.1 Field Activities

CE Consultants personnel conducted the remedial investigation (RI) on September 10 and 11, 1996, and this RI generally followed the requirements of N.J.A.C. 7:26E-3.6. Soil samples were collected from 13 locations in and around the South Site as shown in

Figure 1. Additionally, the samples were analyzed for zinc because it is also used in the manufacturing process and would be indicative of metallic contamination at the site.

2.1.1 Background Sample Locations

Background Sample Locations SS-1, SS-2, and SS-3 are located within the wooded areas to the west, south, and east of the South Site, respectively. Three separate soil samples (0 to 6 inches, 6 to 12 inches, and 12 to 18 inches) were collected at each location. The 0 to 6 inch and 6 to 12 inch samples were submitted to Accutest Laboratories (Accutest) in Dayton, New Jersey for analysis of total lead and zinc. The 12 to 18 inch samples were archived.

In general, soil at the background locations consisted of gray sand to a depth of approximately 4 to 6 inches followed by brown sand to the bottom of the auger boring. Gravel was present in the sand at some locations. No pieces of china or plaster were observed in any of the background samples which appeared in all respects to be natural soil unaffected by human activity.

2.1.2 Flat Area Sample Locations

Soil samples were collected from 8 locations within the flat area (Flat Area) of the South Site that comprises approximately 90 percent of the total site. Three separate soil samples (0 to 6 inches, 6 to 12 inches, and 12 to 18 inches) were collected at each location. The 0 to 6 inch and 6 to 12 inch samples were submitted to Accutest for analysis of total lead and zinc. The 12 to 18 inch samples were archived.

In general, the ground surface in the Flat Area (at each sampling location) has discrete pieces of china and plaster up to approximately 2 inches in size with most pieces being less than 1 inch. At most of the sampling locations, these pieces of china were limited to the upper 3 to 4 inches of the soil profile which consisted of sand and gravel. Soil samples from the 0 to 6 inch interval were sieved through an approximate 1 millimeter sieve to remove the china pieces from the sample.

Soil samples from the 6 to 12 inch interval consisted of brown sand and gravel. Pieces of china were detected in this interval at only two sample locations (SS-9 and SS-10). At Sample Location SS-9, there were a few pieces of china approximately 1/2-inch in size, which were sieved out of the sample. Similar conditions were present at Sample Location SS-10; however, the soil at Sample Location SS-10 was clayey and could not be sieved.

Hand auguring continued at the Sample Location SS-10 location with samples collected every 6 inches until a china-free interval was reached. This occurred at a depth of 30 to 36 inches. These additional samples were archived.

2.1.3 Pit

A pit (Pit) was identified on the South Site. Hand-auger borings were placed at two sample locations (SS-12 and SS-13) in this area. The Pit area is on the western bank of the existing surface water retention basin. The approximate location of the Pit is shown in Figure 1.

?

At Sample Location SS-12, china pieces were present in the soil (sand) at a depth of 30 inches. The china pieces were very abundant at 52 inches and auger refusal was encountered in china at a depth of 54 inches. Conditions were similar at soil Sample Location SS-13 with china chips first encountered at a depth of 34 inches, becoming abundant at 50 inches, with auger refusal at 52 inches. Two samples from Sample Location SS-12 (0 to 30 inches and 30 to 54 inches) and two samples from Sample Location SS-13 (0 to 34 inches and 34 to 52 inches) were submitted for laboratory analyses.

2.1.4 Dredge Sample

On September 11, 1996, a contractor for the property owner was using an excavator to muck-out the existing surface water retention basin. Several buckets of the dredged sediment removed from the basin near the Pit contained china pieces. One bucket contained abundant china pieces. A sample of the dredgings was collected and submitted for laboratory analysis.

2.1.5 Quality Assurance Samples

Three duplicate samples, 1 matrix spike sample and 2 sampling equipment rinseate samples (one per day) were collected and submitted for laboratory analyses.

2.1.6 Sampling Equipment Decontamination Procedure

The soil sampling equipment which included a stainless-steel hand auger, a stainless-steel scoop, and a sieve were decontaminated between samples utilizing the following procedures:

- Remove loose soil
- Detergent wash
- Distilled water rinse
- 20 percent nitric acid solution rinse
- Distilled water rinse

2.1.7 Groundwater

Lead, which is the contaminant of concern at the South Site, is bound in a glass matrix (glaze) on the china. In this form, the lead is not easily mobilized and does not impact groundwater based upon numerous previous investigations performed at the Lenox facility. Moreover, Earth Sciences Consultants, Inc. (Earth Sciences) conducted a groundwater investigation downgradient of the South Site. This groundwater investigation included the permitted installation of three monitoring wells constructed to NJDEP standards which were sampled and analyzed for lead and volatile organic compounds (VOCs). No VOCs were detected in any of the samples and lead levels were well below drinking water standards. A copy of the data obtained is included in Attachment A. For these reasons, groundwater was not investigated during the September 1996 RI.

2.2 Discussion of Results

The soil samples collected on September 10 and 11, 1996 were analyzed by Accutest. These data are summarized in Table 1. Lead and zinc were either not detected or present at concentrations only slightly above detection limits in samples from the three background sampling locations. Elevated concentrations of lead and zinc were present in soil samples collected from the Flat Area and the Pit. In comparing these data to the State of New Jersey residential cleanup standard of 400 milligrams per kilogram (mg/Kg) for total lead and 1,500 mg/Kg for total zinc, it is apparent that the lead standard is exceeded in the

Pit/Dredge Area and at only a few locations in the Flat Area. The zinc standard was not exceeded at any location.

Specifically, all samples from the Pit [SS-12 (0 to 30 inches), SS-12 (30 to 54 inches), SS-13 (0 to 34 inches), SS-13 (34 to 54 inches) and Pond Dredgings] exceeded the residential lead cleanup standard with lead concentrations ranging from 3,270 to 15,500 mg/k. However, only 6 samples from the Flat Area [SS-4 (0 to 6 inches), SS-6 (0 to 6 inches), SS-9 (0 to 6 inches), SS-10 (0 to 6 inches), SS-10 (6 to 12 inches) and SS-11 (0 to 6 inches)] exceeded the lead cleanup standard. Concentrations in these samples ranged from 1,190 milligrams per liter (mg/l) to 15,500 mg/l. Soil samples collected from below the upper 6-inch interval in the Flat Area did not exceed the lead cleanup standard. The only exception was Soil Sample SS-10 (6 to 12 inches).

Pieces of broken china were observed in the upper 3 or 4 inches of the soil profile in the Flat Area and to a depth of 30 inches at Sample Location SS-10. It should be noted that while all samples which exceeded the cleanup standard contained china chips, not all samples which contained china chips exceeded the standard. In general, it appears that the presence of china pieces can be used as a visual indicator in guiding remedial action at the site.

2.3 Certification

The nature and extent of the South Site and the vertical and horizontal extent of lead in soils has been adequately determined for the purpose of initiating remedial action at this site based on our best professional judgment. A certification statement is attached as Attachment B.

3.0 Remedial Action

3.1 Remedial Action Work Plan(RAW) Requirements

This RAW was prepared in conformance with the requirements of N.J.A.C. 7:26E-6. The horizontal extent of the contaminated area was determined based on visual observations at the site, interviews with knowledgeable plant personnel, review of historical aerial photographs and soil sampling conducted during the RI. The remedial work will be performed in accordance with the requirements of New Jersey Department of Environmental Protection (NJDEP) regulations and using best professional judgment. Following excavation of contaminated soil (estimated at 800 cubic yards), samples will be

collected at the locations shown in Figure 1 to confirm that the area has been adequately remediated. Additionally, groundwater quality will be investigated utilizing geoprobe borings as described in Section 3.5 below.

3.2 Applicable Remediation Standards

Lead is the only constituent of concern in soils at the site. The applicable remediation standards are the NJDEP Direct Contact Soil Cleanup Criteria (SCC) for residential properties. These standards are presented in NJDEP's February 3, 1992 Cleanup Standards for Contaminated Sites (N.J.A.C. 7:26D). Based on these standards, the current SCC for lead at residential properties is 400 mg/Kg.

3.3 Remedial Action Description

Remedial action at the South Site will consist of excavation and off-site disposal of soil/china in the Pit/Dredge Area. The soil/china from the Pit/Dredge Area will be removed utilizing an excavator and/or loader. Excavation will continue until unaffected (nonchina-containing) soils are encountered. The soil/china will be loaded into lined and covered roll-off containers and stored on Lenox property pending laboratory analysis. Based on the laboratory results, the excavated material will be disposed/recycled at an appropriate off-site facility.

The remaining remedial action at the South Site will consist of removal of the china chips in the upper 6 inches of soil in the Flat Area. The china chips will be removed utilizing screening equipment. The removed china chips will be disposed/recycled at an appropriate off-site facility.

Remedial activities will be verified through the collection and laboratory analysis of confirmation soil samples. The number and location of the confirmation samples will be as shown in Figure 1. If these surfacial samples indicate that lead contamination above the 400 mg/Kg residential cleanup level remains, additional soil will be removed followed by a second round of confirmation sampling.

Soil at the South Site consists primarily of sand having a relatively high permeability and the site is generally flat. Therefore, it is not expected that surface water runoff will pose a problem. In fact, surface water runoff from the area around the South Site is currently directed to a drainage swale on the South Site (Figure 1) where it infiltrates into the

subsurface. Considering these conditions, erosion and sedimentation control for the remedial action will consist of seeding and mulching.

3.4 Confirmatory Soil Sampling

Following excavation of contaminated soil at the South Site, confirmatory soil samples will be collected and analyzed for total lead. These samples will be collected based on a approximate 70-foot by 70-foot square grid as shown in Figure 1. Grid sampling locations will be supplemented by several additional samples placed to ensure adequate delineation of the horizontal limits of the area and/or as necessary based on field observations at the time of remediation.

3.5 Geoprobe Investigation

A geoprobe investigation will be conducted (after confirmation soil sampling proves the site soils are below the cleanup level) to collect groundwater samples for purposes of confirming the previous investigation conducted by Earth Sciences. Groundwater flow at the Lenox facility is toward the northeast. Three geoprobe borings will be drilled hydraulically downgradient of the South Site. The approximate geoprobe drilling locations are shown in Figure 1.

A geoprobe is a hydraulically-powered percussion/probing machine specifically designed for use in the environmental industry. The geoprobe uses direct push technology to insert sampling tools into the ground without the use of a drilling method to remove the soil and make a path for the sampling tool. Direct push technology relies on the static weight of the vehicle upon which the unit is mounted combined with the percussive force of the hydraulic hammer. Groundwater samples are collected by inserting plastic tubing through geoprobe rods and utilizing a peristaltic pump to extract the water sample from the subsurface and place it directly into the sample container.

3.6 Equipment Decontamination

An equipment decontamination area will be set up near the South Site at the approximate location shown in Figure 1. A 50-mil plastic liner will be used to construct a 16-foot by 24-foot decontamination pad for purposes of collecting the decontamination fluids. Loose soil will be removed from the equipment (and ultimately the decontamination area) and disposed with the contaminated soil from the South Site. The equipment will be pressure washed and the washwater will be collected for treatment at Lenox's on-site lead bearing

wastewater treatment plant which discharges to the Atlantic County Utility Authority (ACUA) sanitary system.

All sampling equipment, such as the geoprobe rods, soil trowels, etc., will be decontaminated by the same procedure utilized in the RI which includes:

- Remove loose soil
- Detergent wash
- Distilled water rinse
- 20 percent nitric acid solution rinse
- Distilled water rinse

The decontamination fluids will be collected into 55-gallon drums and transported to the on-site wastewater treatment plant.

3.7 Waste Disposal

Soil removed from the South Site will be placed in lined and tarped roll-off containers having sealed end gates and temporarily stored in one of the parking areas at the Lenox facility pending analysis. The roll-off containers will be sampled and analyzed to determine whether or not the soil is hazardous and the soil will be disposed/recycled at an appropriate off-site disposal/recycling facility. These facilities will include Chemical Waste Management, Chemical Services facilities in Model City, NY or Emille, Alabama (for hazardous waste); the ACUA landfill in Eggharbor Township, New Jersey (for residual waste); or A.E. Stone, Inc., an asphalt plant, located in Egg Harbor Township (if recycling is appropriate).

3.8 Plans

All required plans (Health & Safety, Sampling & Analysis, Quality Assurance/Quality Control) will be based upon those previously submitted and approved by the NJDEP for the Lenox site.

3.9 Project Schedule

Lenox has requested that the NJDEP conduct an expedited review and approval of this RAWP in order that the work may be completed prior to the 1996/1997 Winter season. Assuming that approvals of this RAWP are received by October 30, 1996, Lenox will adhere to the following schedule:

Item	Elapsed Time from Receipt of NJDEP Approval (Weeks)
Contract with Construction and Disposal/Recycle Firms and Notify NJDEP of Starting Date of Field Activities	3
Start Field Removal	4
Complete Field Removal and Store Wastes and Notify NJDEP of Starting Date of Geoprobe Activities	6
Geoprobe Testing	7 to 9
Receipt Analytical Results	7
Ship Wastes	9
Submit Remedial Action Report to NJDEP	11

Table

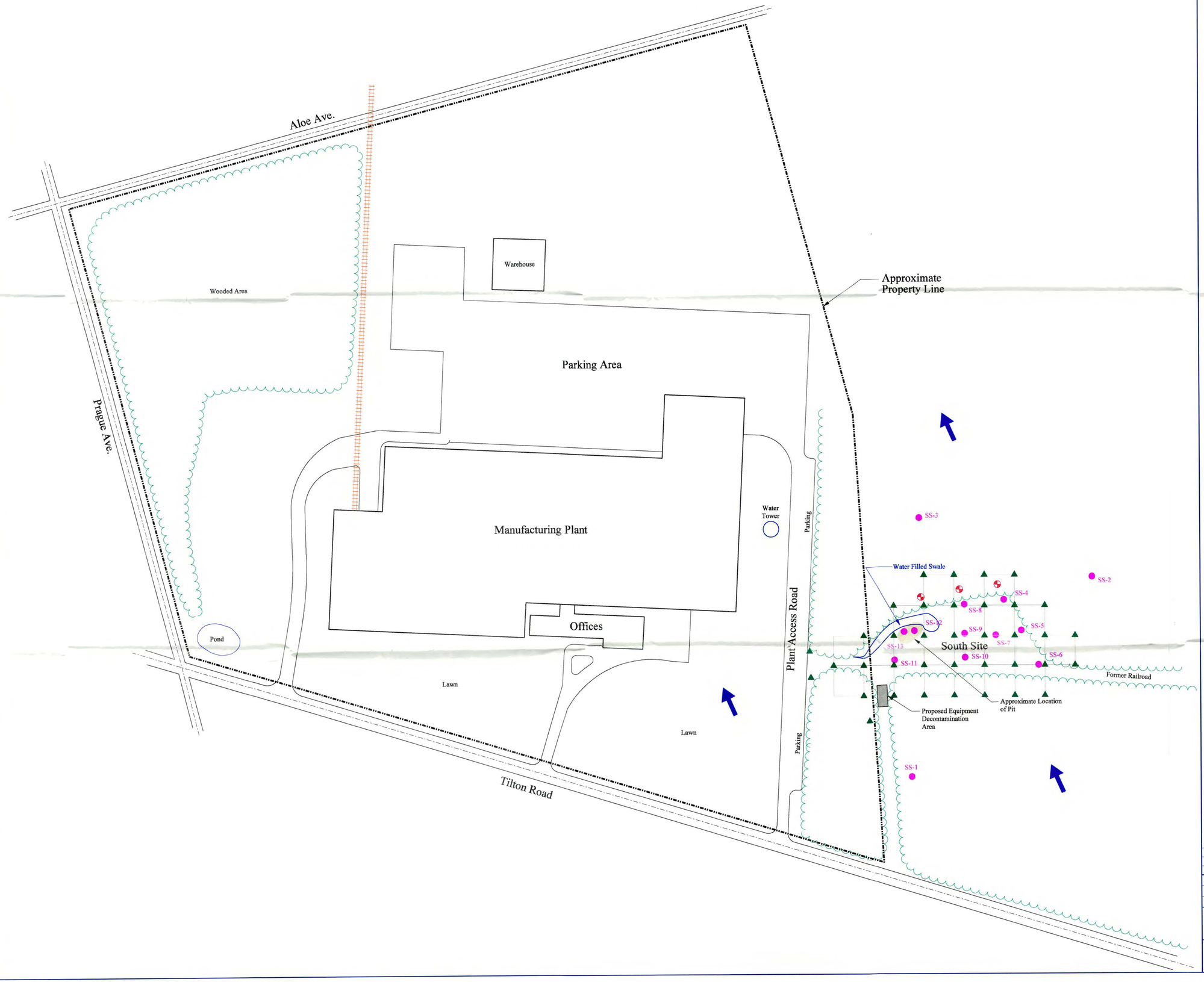
Table 1
Soil Sample Data
Lenox Incorporated
Pomona, New Jersey

	Sample Location Designation	Sample Depth	Total Lead mg/Kg	Total Zinc mg/Kg
Background Samples	SS-1	(0-6")	<10	<2.0
	SS-1	(6-12")	<10	3.3
	SS-2	(0-6")	12.5	<2.1
	SS-2	(6-12")	<11	6.2
	SS-3	(0-6")	25.4	2.2
	SS-3	(6-12")	<11	4.6
Flat Area Samples	SS-4	(0-6")	2,680/3,580	92.2/93.9
	SS-4	(6-12")	12.0	2.5
	SS-5	(0-6")	92.9	6.4
	SS-5	(6-12")	<10	2.5
	SS-6	(0-6")	7,300	136
	SS-6	(6-12")	11.0	4.2
	SS-7	(0-6")	40.3	12.0
	SS-7	(6-12")	<10	3.0
	SS-8	(0-6")	246	9.1
	SS-8	(6-12")	<11	2.2
	SS-9	(0-6")	1,190	39.2
	SS-9	(6-12")	40.8	3.7
	SS-10	(0-6")	1,860	45.2
	SS-10	(6-12")	1,850	49.4
	SS-11	(0-6")	15,500/15,500	283/286
	SS-11	(6-12")	96.3	10.1
Pit	SS-12	(0-30")	3,270	228
	SS-12	(30"-54")	7,940/9,020	461/456
	SS-13	(0-30")	7,630	383
	SS-13	(30"-52")	15,500	528
	Pond Dredgings		11,300	291

Note:

1. Samples were collected on 9/10/96 and 9/11/96.
2. Results of duplicate analysis are separated by a backslash.

Figure



REV.	DATE	DESCRIPTION
DRN.	TJH	10/11/96
CHK.		
APP.		

PROJECT: Lenox China Pomona, NJ

PROJECT NO.: C0022

SHEET TITLE: Figure 1 Site Plan

Lenox Incorporated

DRAWING NO.: CE0291

CE Consultants, Inc.
A Crouse Enterprises Company 400 Penn Center Boulevard, Suite 600 Pittsburgh, PA 15235 412/823-5200
CROUSE

PLOTTED:16 OCT '96

Attachment A

Table I
Results of Chemical Analyses
October 17, 1989 Groundwater Samples
Lenox China, Inc.
Pomona, New Jersey

Parameter	Units	Sample Identification					
		LX-1	LX-2	LX-3	LX-4	Trip Blank	Field Blank
Total Lead	mg/l	0.015	0.002	0.013	<0.001	<0.001	<0.001
Dissolved Lead	mg/l	0.004	<0.001	0.001	<0.001	<0.001	<0.001
pH	pH units	5.70	5.30	4.10	4.80	6.40	6.90
Specific Conductance @ 25°C	µmhos/cm	290	1,500	1,100	45	2	2
Trichloroethene(1)	µg/l	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1

(1)EPA Method 601.

Table 2
Groundwater Volatile Organic Analysis Data
August 31, 1989 Samples
Lenox China, Inc.
Pomona, New Jersey

Parameter	Units	Sample Identification			
		LX-1	LX-2	LX-3	LX-4
Volatile Organic Analyses:					
Acrolein	g/l	<250	<250	<250	<250
Acrylonitrile	g/l	<250	<250	<250	<250
Benzene	g/l	<5	<5	<5	<5
Carbon Tetrachloride	g/l	<5	<5	<5	<5
Chlorobenzene	g/l	<5	<5	<5	<5
1,2-Dichloroethane	g/l	<5	<5	<5	<5
1,1,1-Trichloroethane	g/l	<5	<5	<5	<5
1,1-Dichloroethane	g/l	<5	<5	<5	<5
1,1,2-Trichloroethane	g/l	<5	<5	<5	<5
1,1,2,2-Tetrachloroethane	g/l	<5	<5	<5	<5
Chloroethane	g/l	<5	<5	<5	<5
2-Chloroethylvinyl Ether	g/l	<5	<5	<5	<5
Chloroform	g/l	<5	<5	<5	<5
1,1-Dichloroethene	g/l	<5	<5	<5	<5
Trans-1,2-Dichloroethene	g/l	<5	<5	<5	<5
1,2-Dichloropropane	g/l	<5	<5	<5	<5
1,3-Dichloropropene	g/l	<5	<5	<5	<5
Ethylbenzene	g/l	<5	<5	<5	<5
Methylene Chloride	g/l	<5	<5	<5	<5
Chloromethane	g/l	<5	<5	<5	<5
Bromomethane	g/l	<5	<5	<5	<5
Bromoform	g/l	<5	<5	<5	<5
Dichlorobromomethane	g/l	<5	<5	<5	<5
Chlorodibromomethane	g/l	<5	<5	<5	<5
Tetrachloroethene	g/l	<5	<5	<5	<5
Toluene	g/l	<5	<5	<5	<5
Trichloroethene	g/l	<5	<5	<5	<5
Vinyl Chloride	g/l	<5	<5	<5	<5

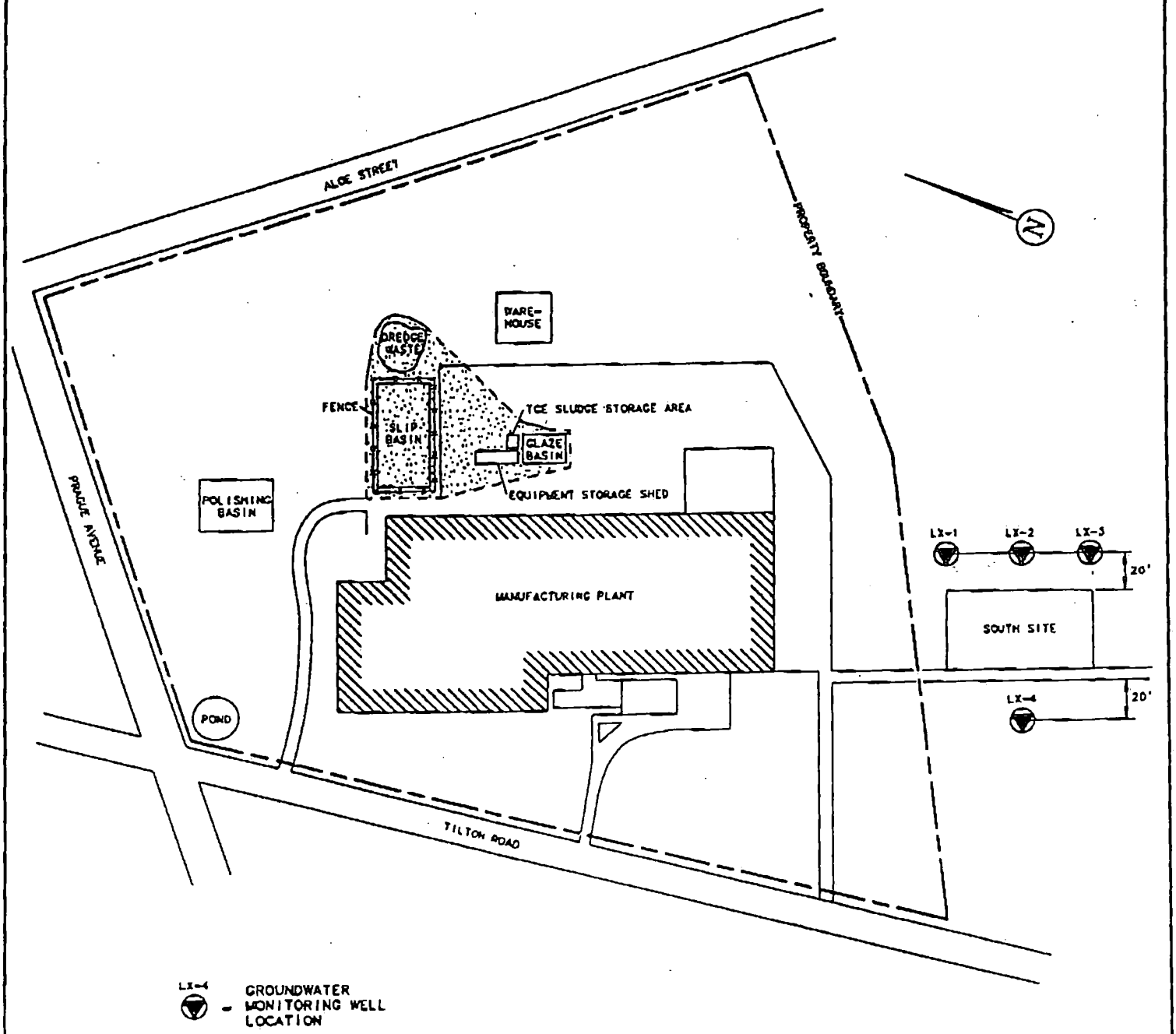


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FIGURE 1

GROUNDWATER MONITORING WELL LOCATION PLAN

PREPARED FOR

LENOX, INC.
LAWRENCEVILLE, NEW JERSEY

APPROVED [illegible] 11/16/95
CHECKED [illegible] 11/16/95
DRAWING NUMBER
8538-A6

Earth Sciences Consultants Inc

Attachment B

Certifications
South Site Remedial Action Plan
Lenox Incorporated
Pomona, New Jersey

A. The following certification shall be signed by the highest ranking individual with overall legal responsibility for implementing the remediation of a site, but shall not include contractors or consultants:

"I certify under penalty of law that the information provided in this document is true, accurate, and complete. I am aware that there are significant civil penalties for knowingly submitting false, inaccurate or incomplete information and that I am committing a crime of the fourth degree if I make a written false statement which I do not believe to be true. I am also aware that if I knowingly direct or authorize the violation of any statute, I am personally liable for the penalties."

Printed Name Jerome J. Ciszewski Title Senior Vice President and President, Lenox Operations

Signature Jerome J. Ciszewski Date 10/17/96

Notary Signature Frances P. Benish Date 10/17/96

FRANCES P. BENISH
Notary Public of New Jersey
My Commission Expires June 20, 1998

B. The following certification for a corporation shall be signed by a principal executive officer of at least the level of vice president.

"I certify under penalty of law that I have personally examined and am familiar with the information submitted herein and all attached documents, and that based on my inquiries of those individuals immediately responsible for obtaining the information, I believe that the submitted information is true, accurate and complete. I am aware that there are significant civil penalties for knowingly submitting false, inaccurate or incomplete information and that I am committing a crime of the fourth degree if I make a written false statement which I do not believe to be true. I am also aware that if I knowingly direct or authorize the violation of any statue, I am personally liable for the penalties.

Printed Name Louis A. Fantin Title Vice President, Secretary and Lenox Counsel

Signature L A Fantin Date 10/17/96

Notary Signature Frances P. Benish Date 10/17/96

FRANCES P. BENISH
Notary Public of New Jersey
My Commission Expires June 20, 1998

Certifications
South Site Remedial Action Plan
Lenox Incorporated
Pomona, New Jersey

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"I certify under penalty of law that the information provided in this document is true, accurate, and complete. I am aware that there are significant civil penalties for knowingly submitting false, inaccurate or incomplete information and that I am committing a crime of the fourth degree if I make a written false statement which I do not believe to be true. I am also aware that if I knowingly direct or authorize the violation of any statute, I am personally liable for the penalties."

Printed Name _____ Title _____

Signature _____ Date _____

Notary Signature _____ Date _____

B. The following certification for a corporation shall be signed by a principal executive officer of at least the level of vice president.

"I certify under penalty of law that I have personally examined and am familiar with the information submitted herein and all attached documents, and that based on my inquiries of those individuals immediately responsible for obtaining the information, I believe that the submitted information is true, accurate and complete. I am aware that there are significant civil penalties for knowingly submitting false, inaccurate or incomplete information and that I am committing a crime of the fourth degree if I make a written false statement which I do not believe to be true. I am also aware that if I knowingly direct or authorize the violation of any statue, I am personally liable for the penalties.

Printed Name _____ Title _____

Signature _____ Date _____

Notary Signature _____ Date _____